

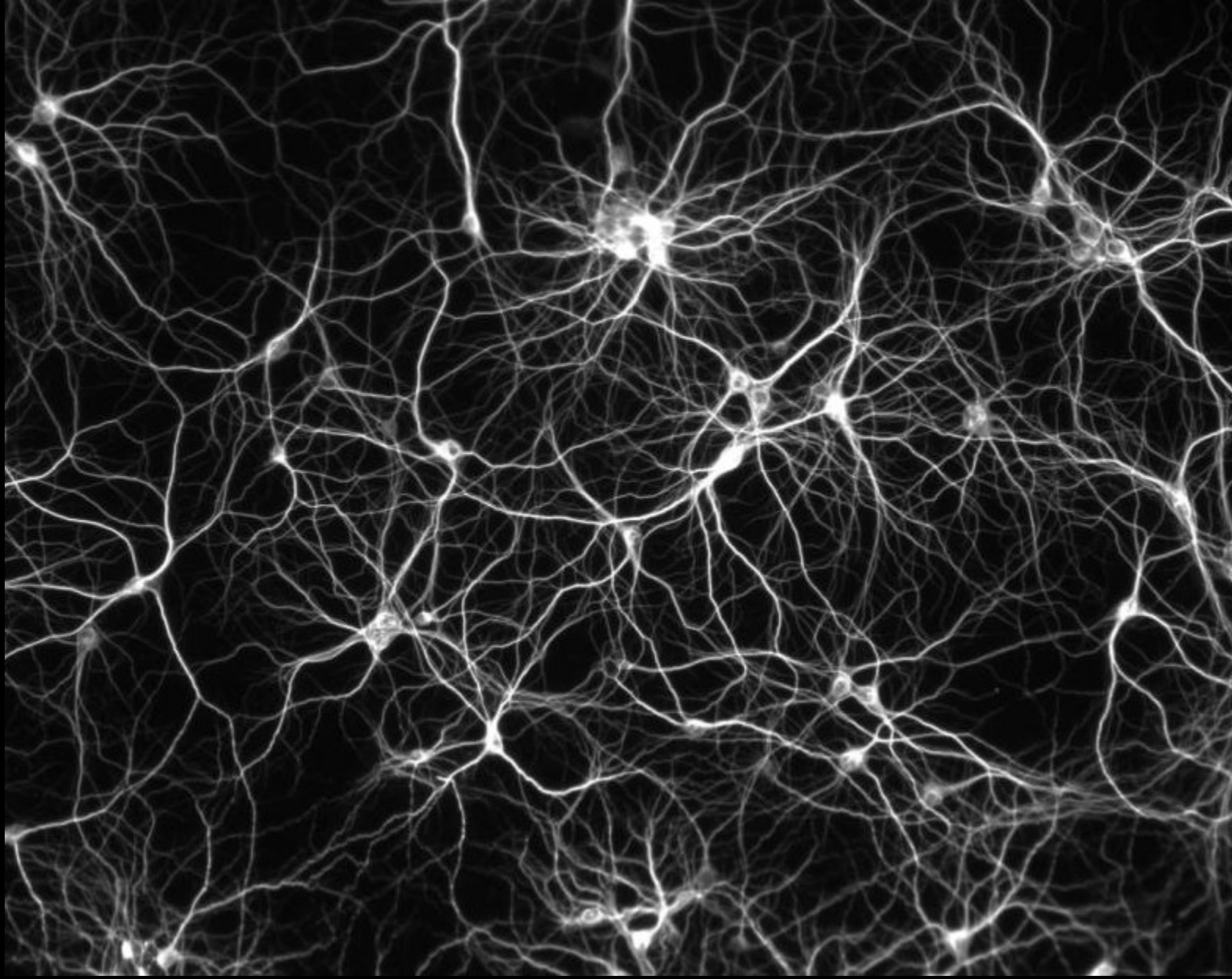
Unsustainable

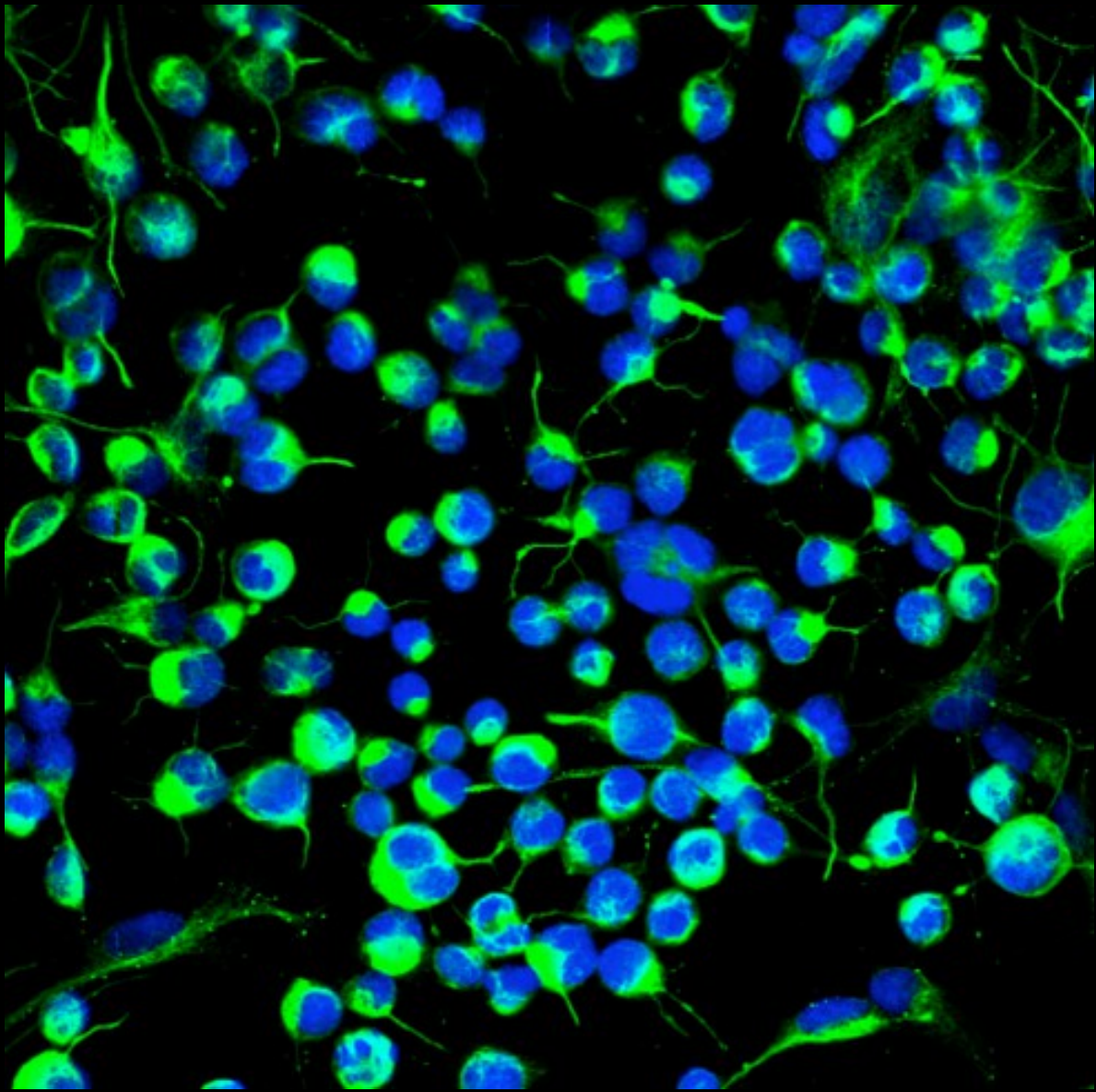
Understanding the risks and opportunities of our times

**Anything That
Is
Unsustainable
Will Stop**

My Life As A Scientist...

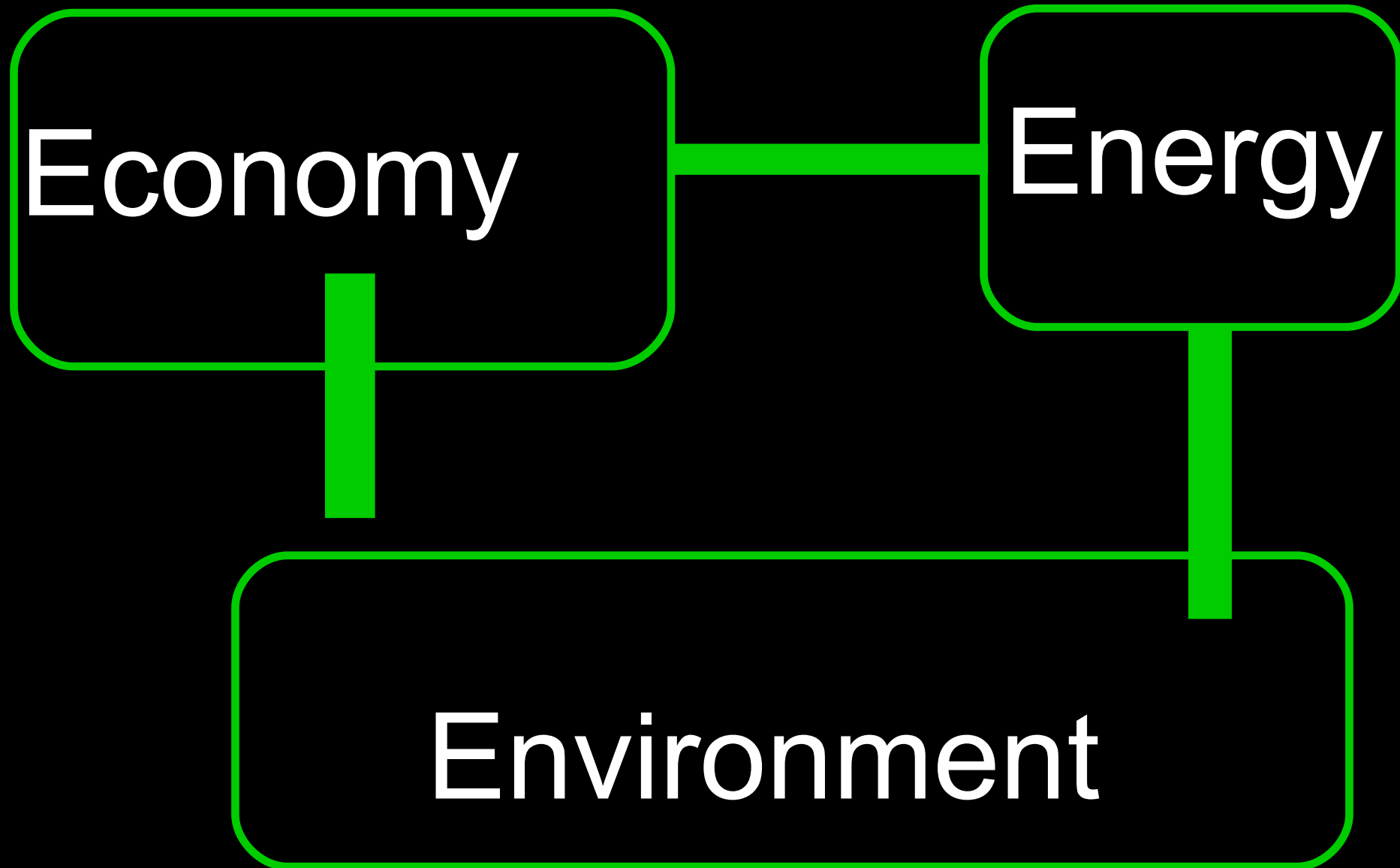






The Really Big Picture

The Three “E”s



What is Money?

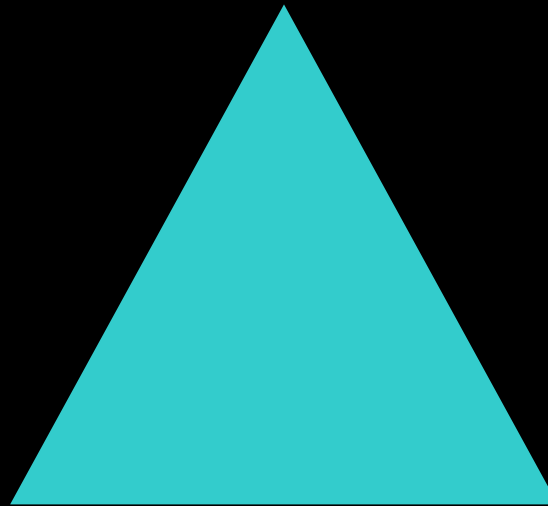
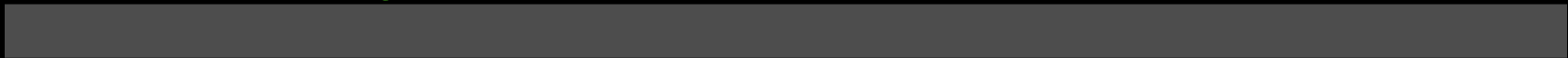
Money is a claim on real
goods and services (i.e.
‘wealth’)

Debt is a claim on money.

In Balance...

\$ Money \$

Real
Wealth



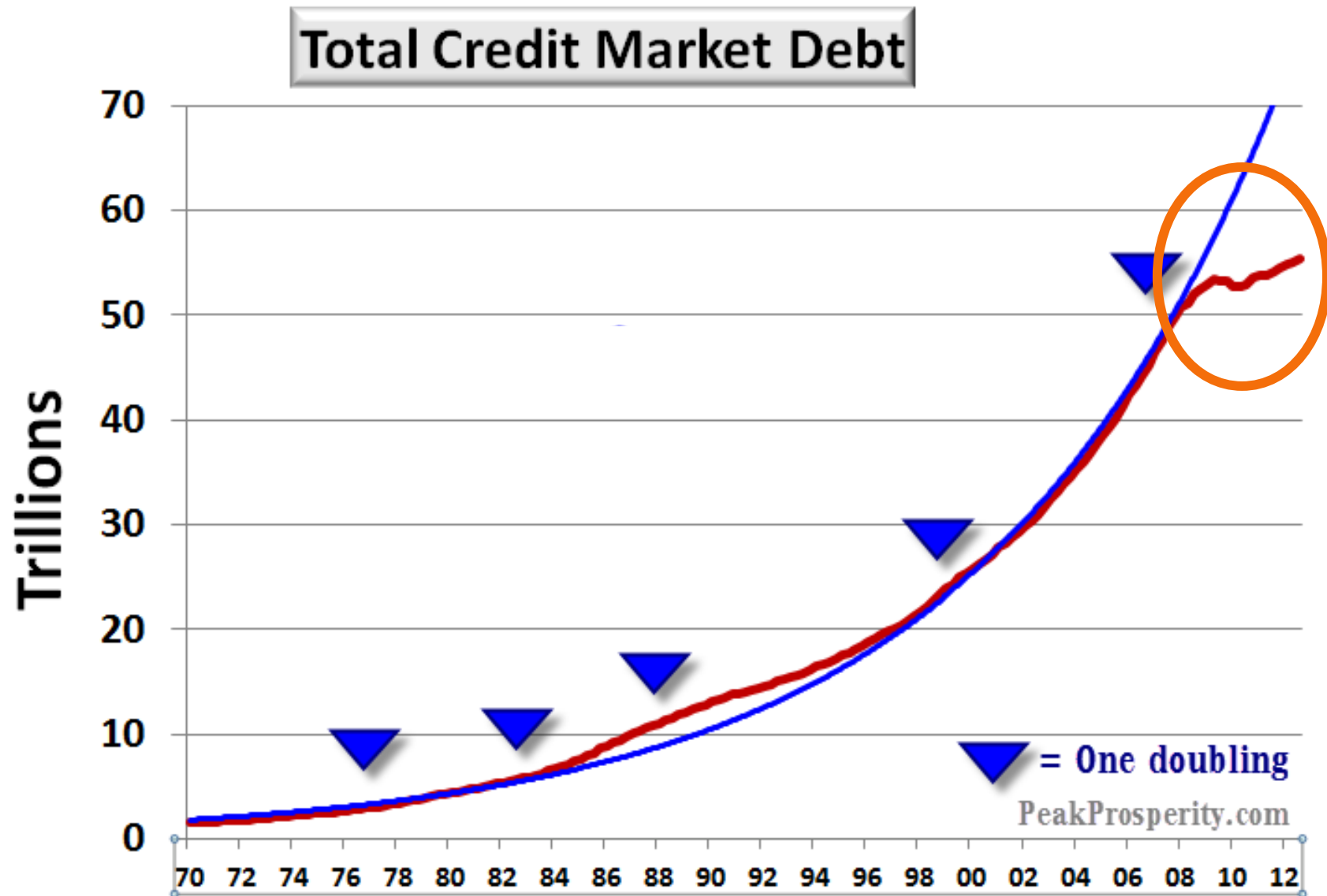
Out of Balance...



**All Money
is Loaned
into
Existence**



The One Chart That Explains It All



Something Changed Around 1985

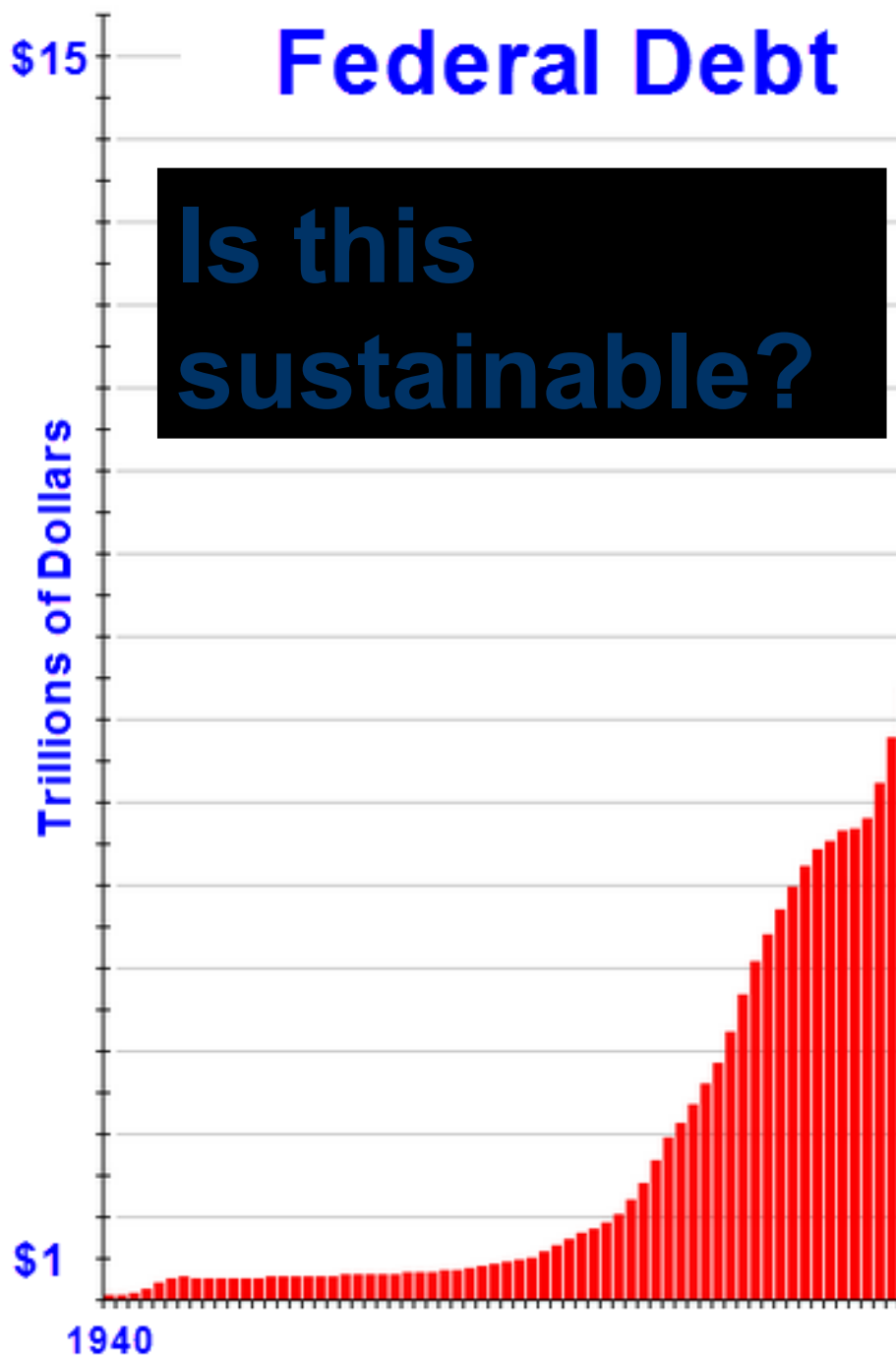
US DEBT TO GDP



Source: Ned Davis Research <http://www.safehaven.com/article-5995.htm>

Federal Debt

Is this
sustainable?



Total Debt & Liabilities

US Federal Debt = \$16.8 Trillion

US Federal Liabilities = \$100 to
\$200 trillion

US State Liabilities = \$3 Trillion

Global Debt

THE WALL STREET JOURNAL.

U.S. EDITION ▾

May 11, 2013, 5:00 AM

Number of the Week: Total World Debt Load at 313% of GDP

376% just for developed economies

<http://blogs.wsj.com/economics/2013/05/11/number-of-the-week-total-world-debt-load-at-313-of-gdp/>



Problems Vs. Predicaments



**Tomorrow's growth
is the collateral for
today's debt.**

~Colin Campbell

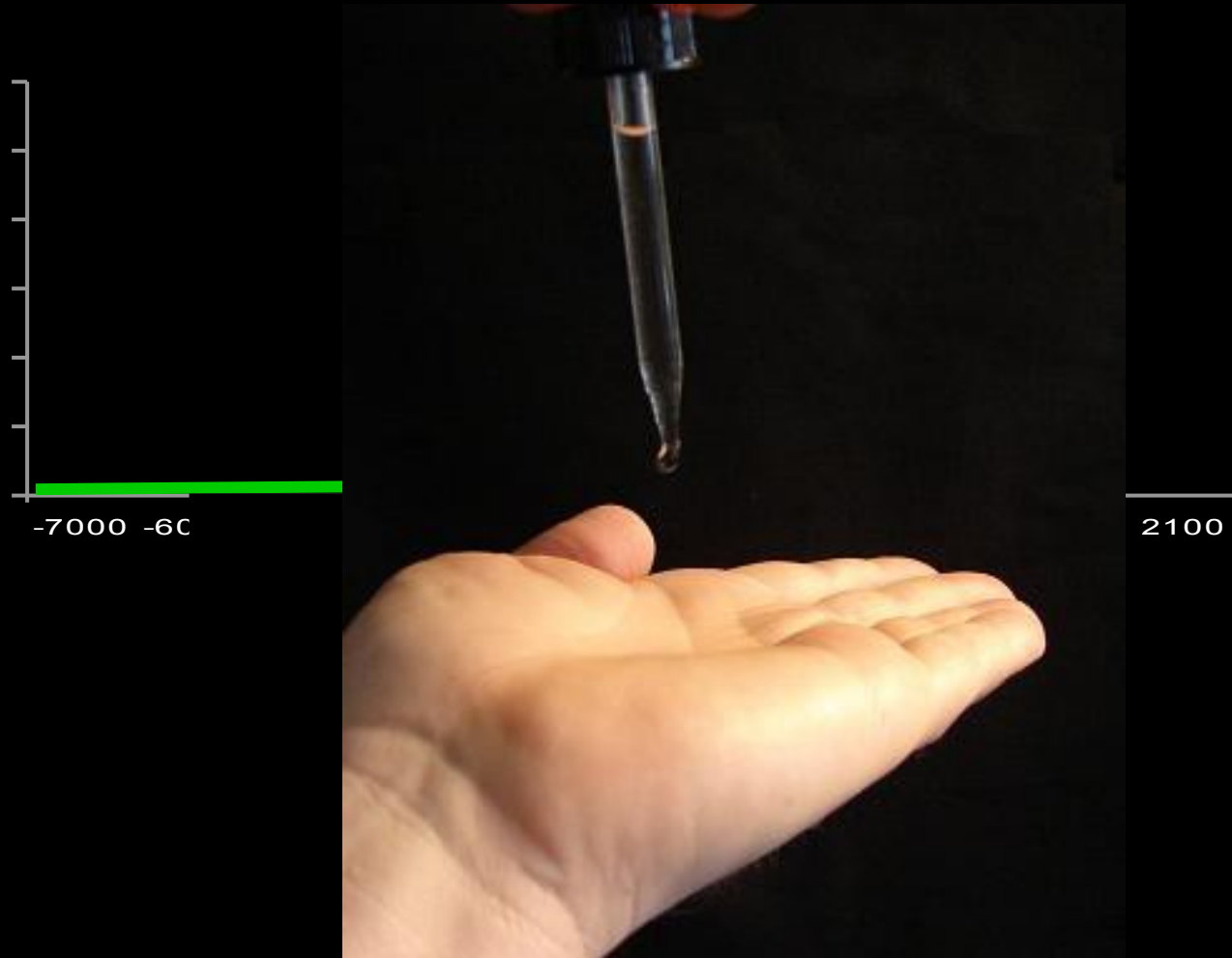
How Economists See the World

$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k} \rightarrow$$

Growth

Exponential Growth

The Power of Exponential Growth



Yankee Stadium



**If we began at 12:00, when would
Yankee Stadium be filled?**

12:50

**At what time would it still be
97% empty?**

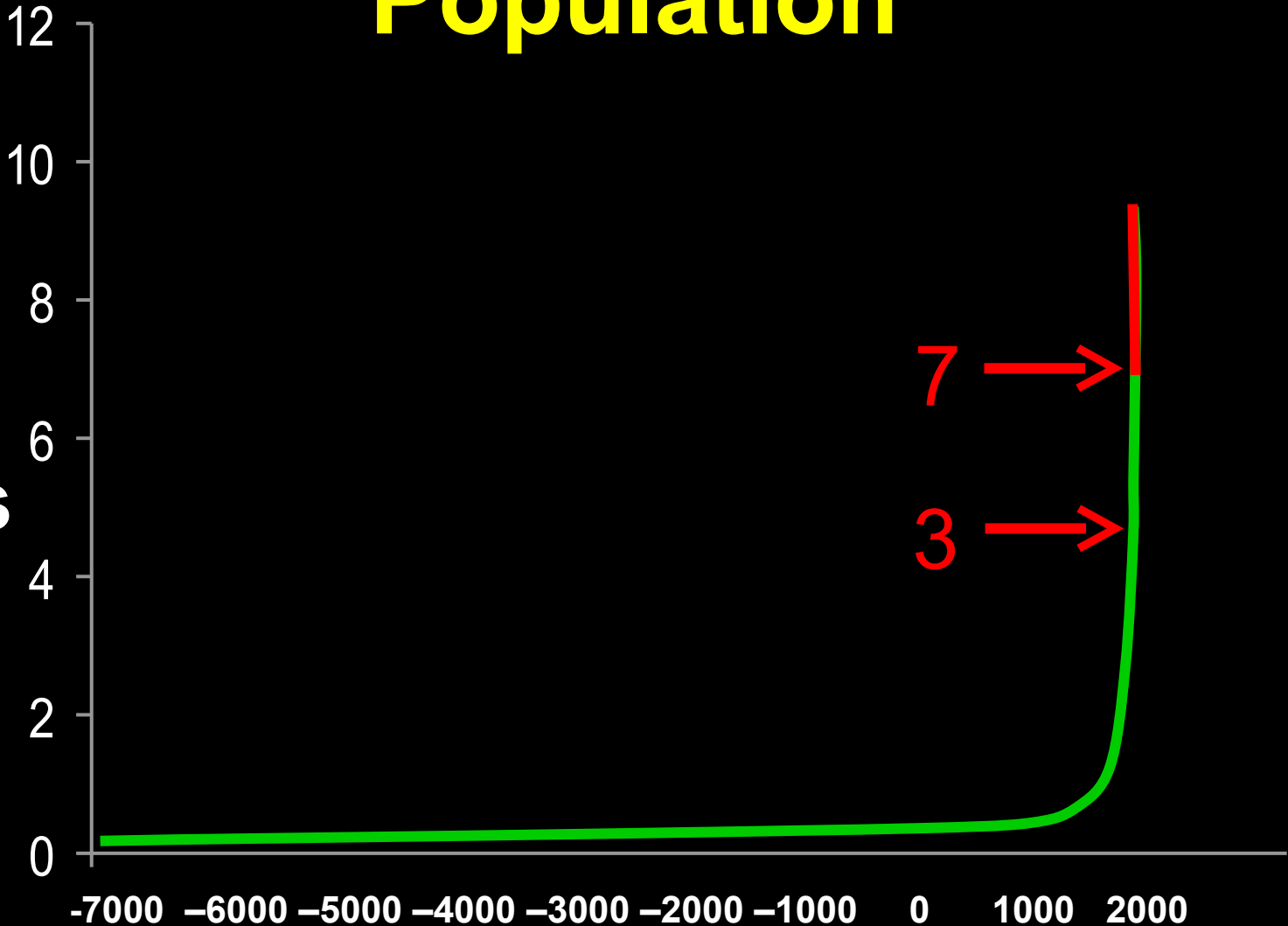
12:45

Our Stadium



Population

Billions



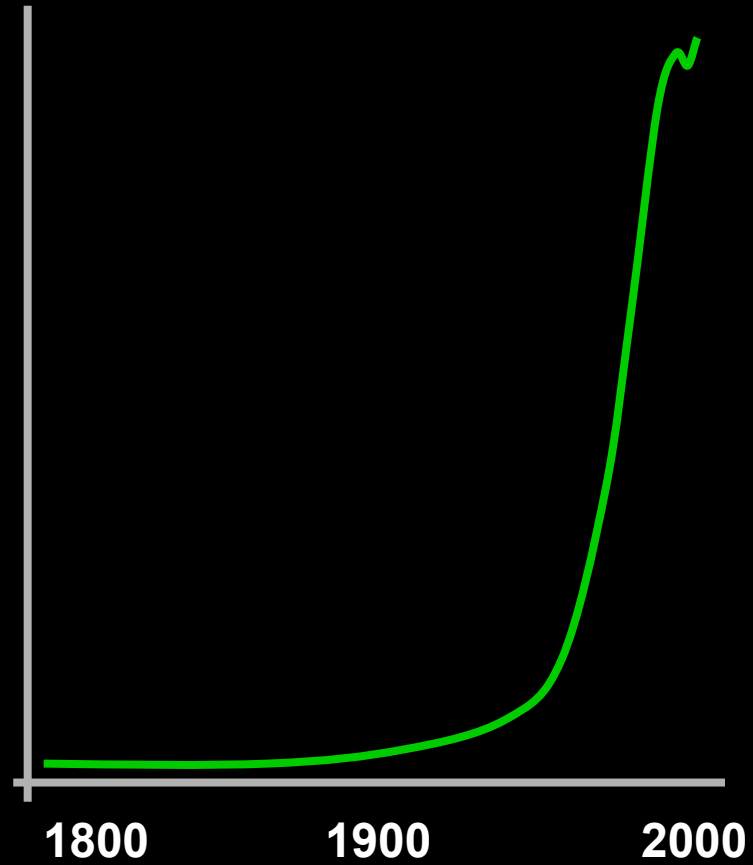
Years

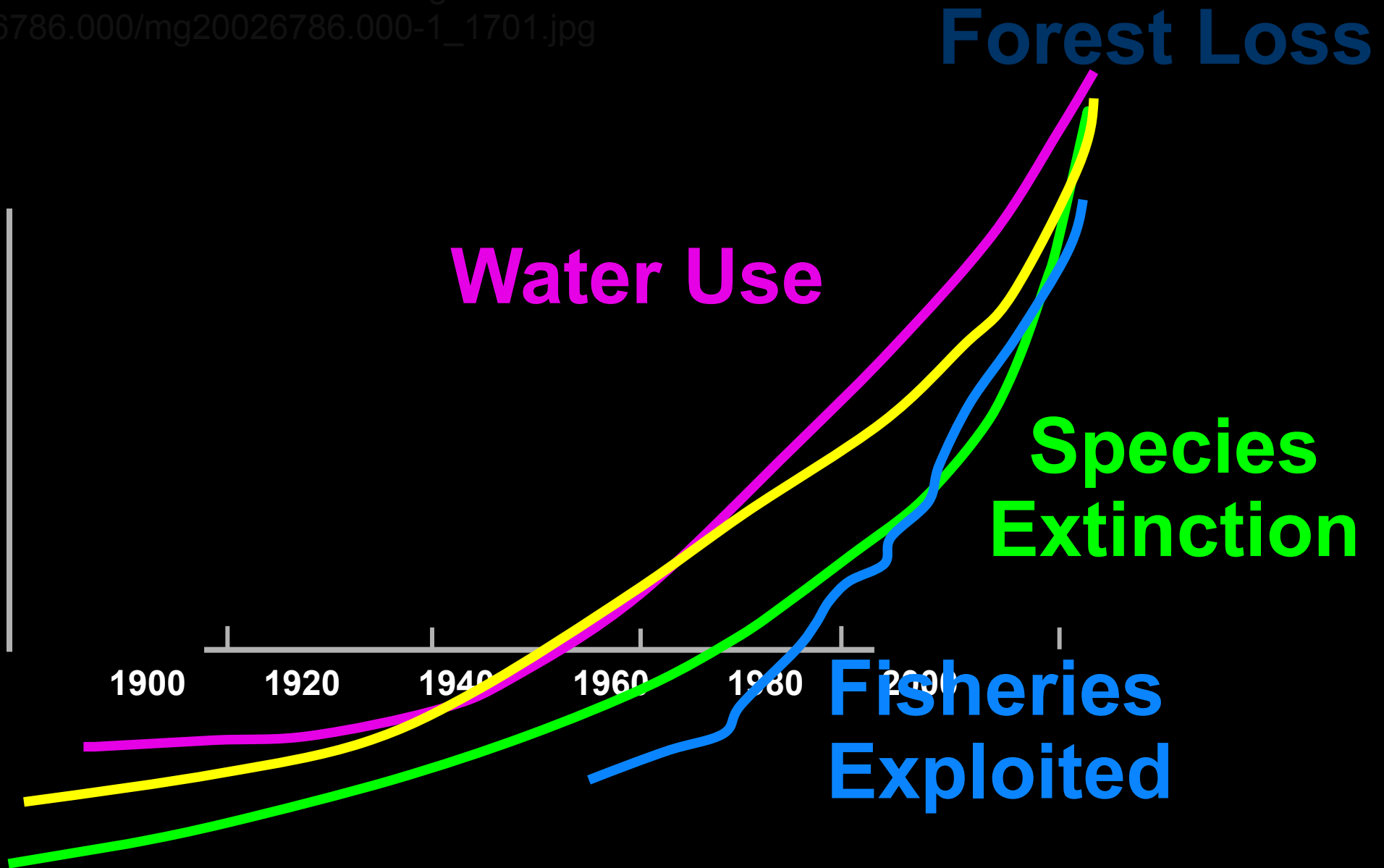
7 →

3 →

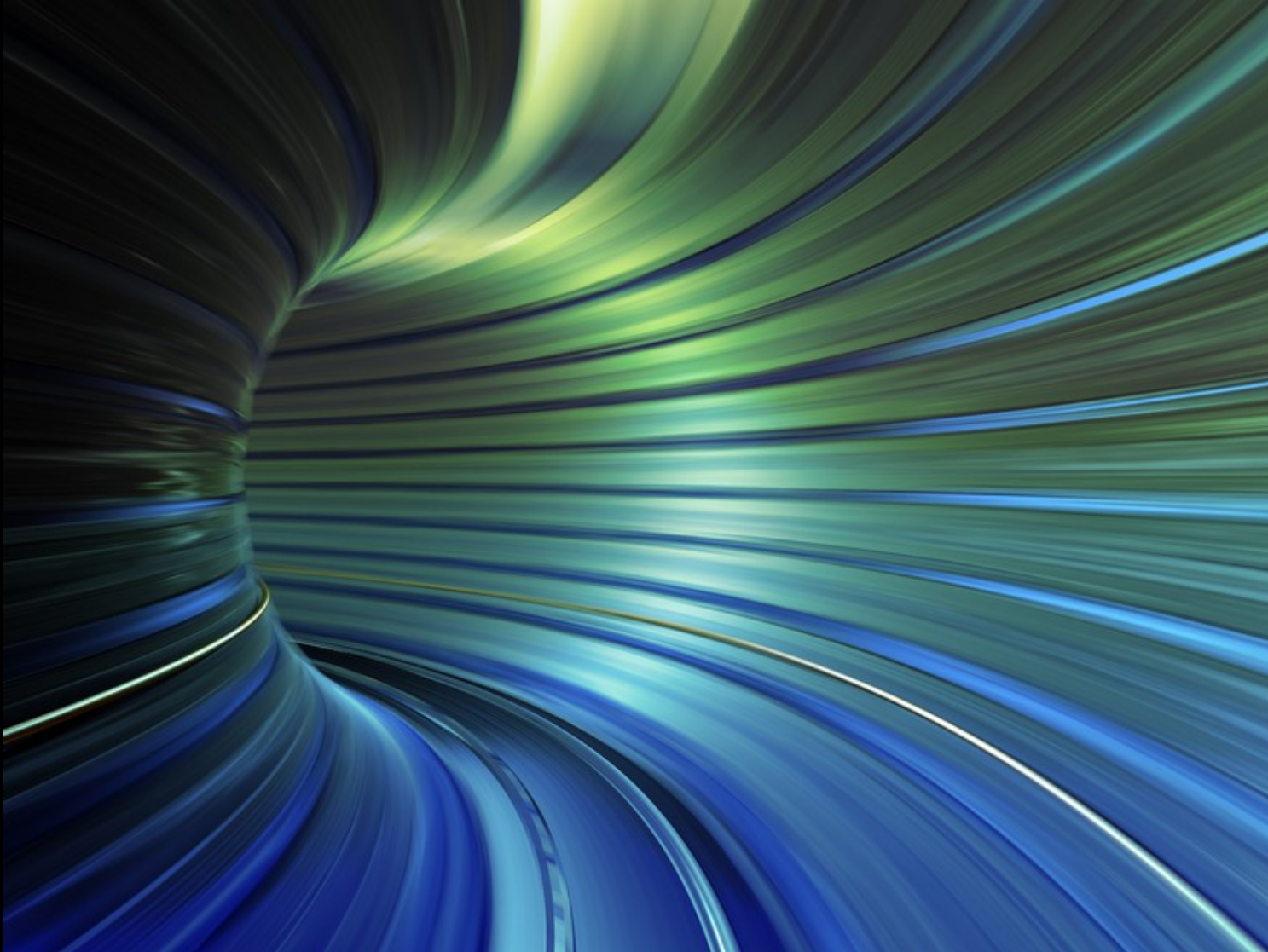
Oil

Production



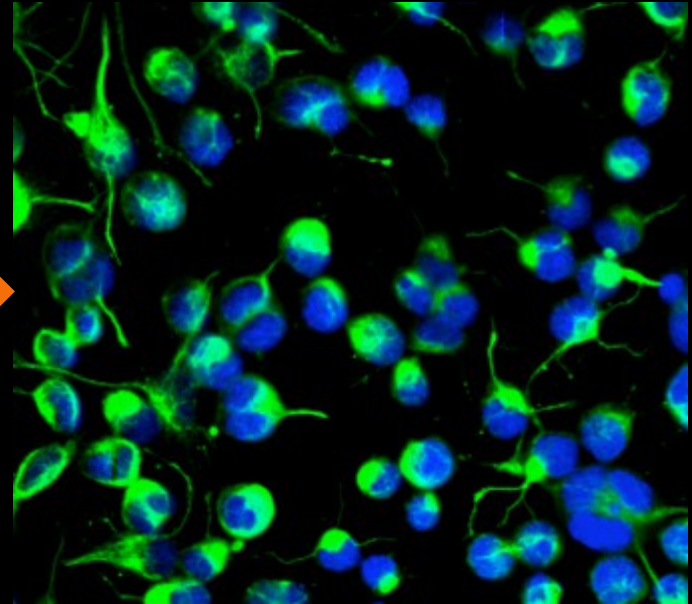
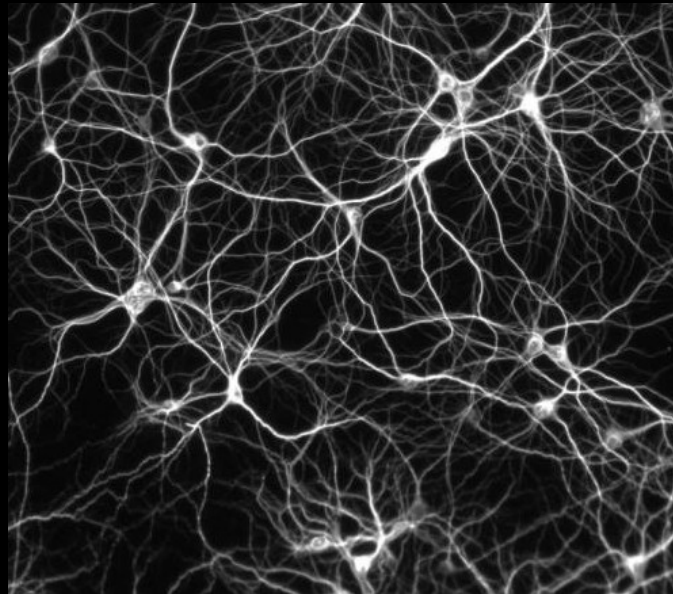


Exponential Systems Speed Up...



Features Of Complex Systems

- They are inherently unpredictable
- They owe their order and complexity to energy

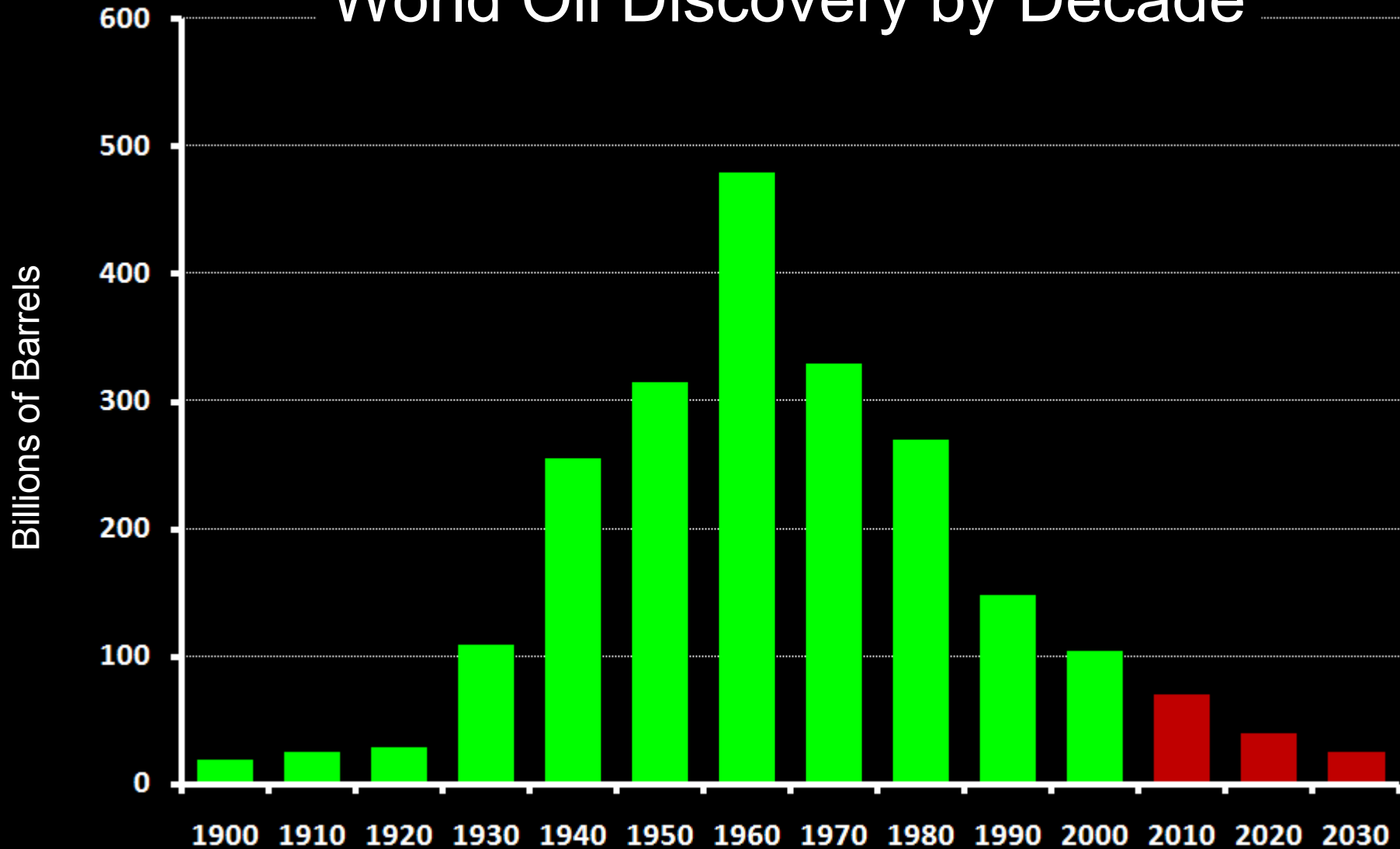


Energy

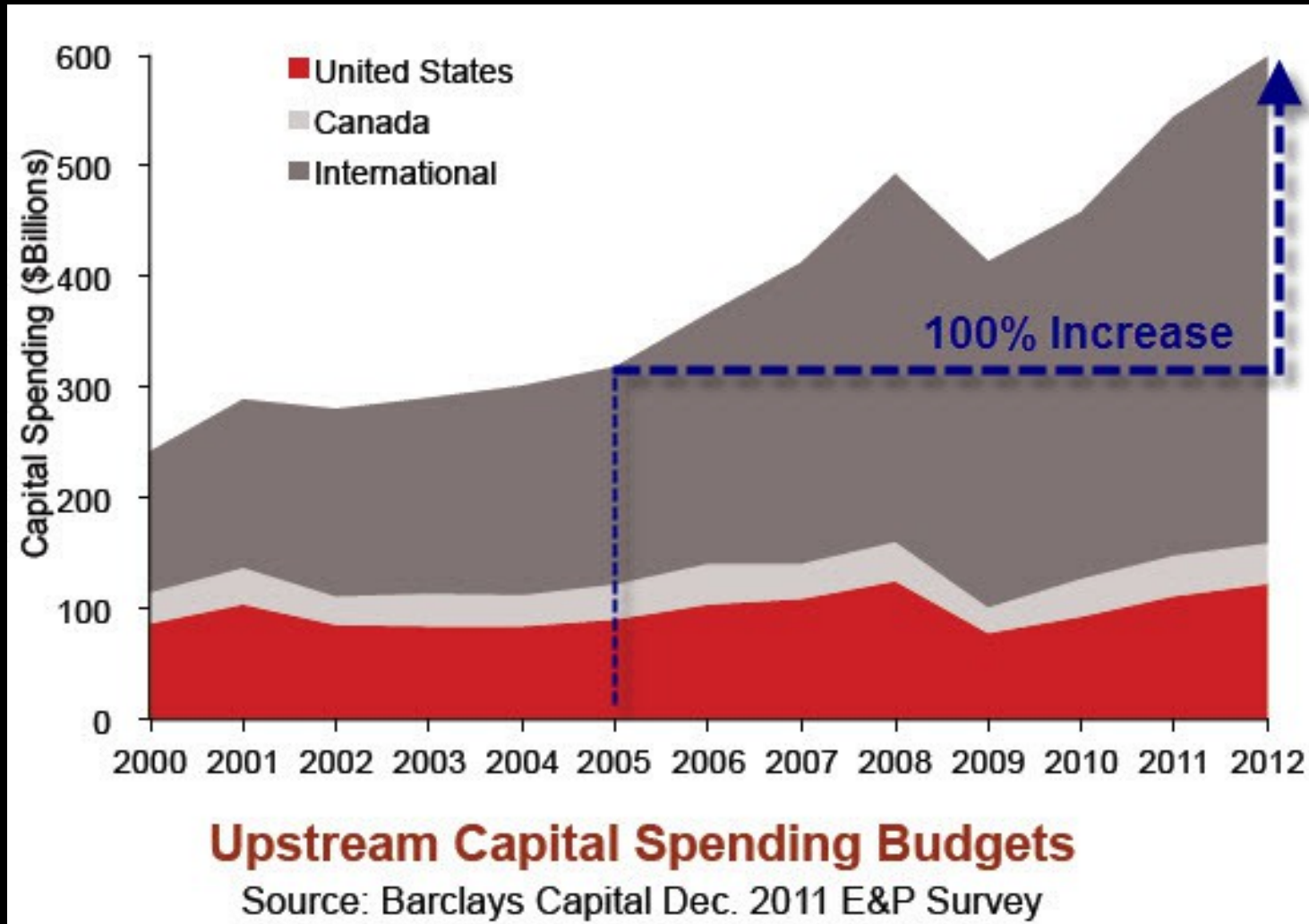
Specifically, Oil

A Discovery Peak

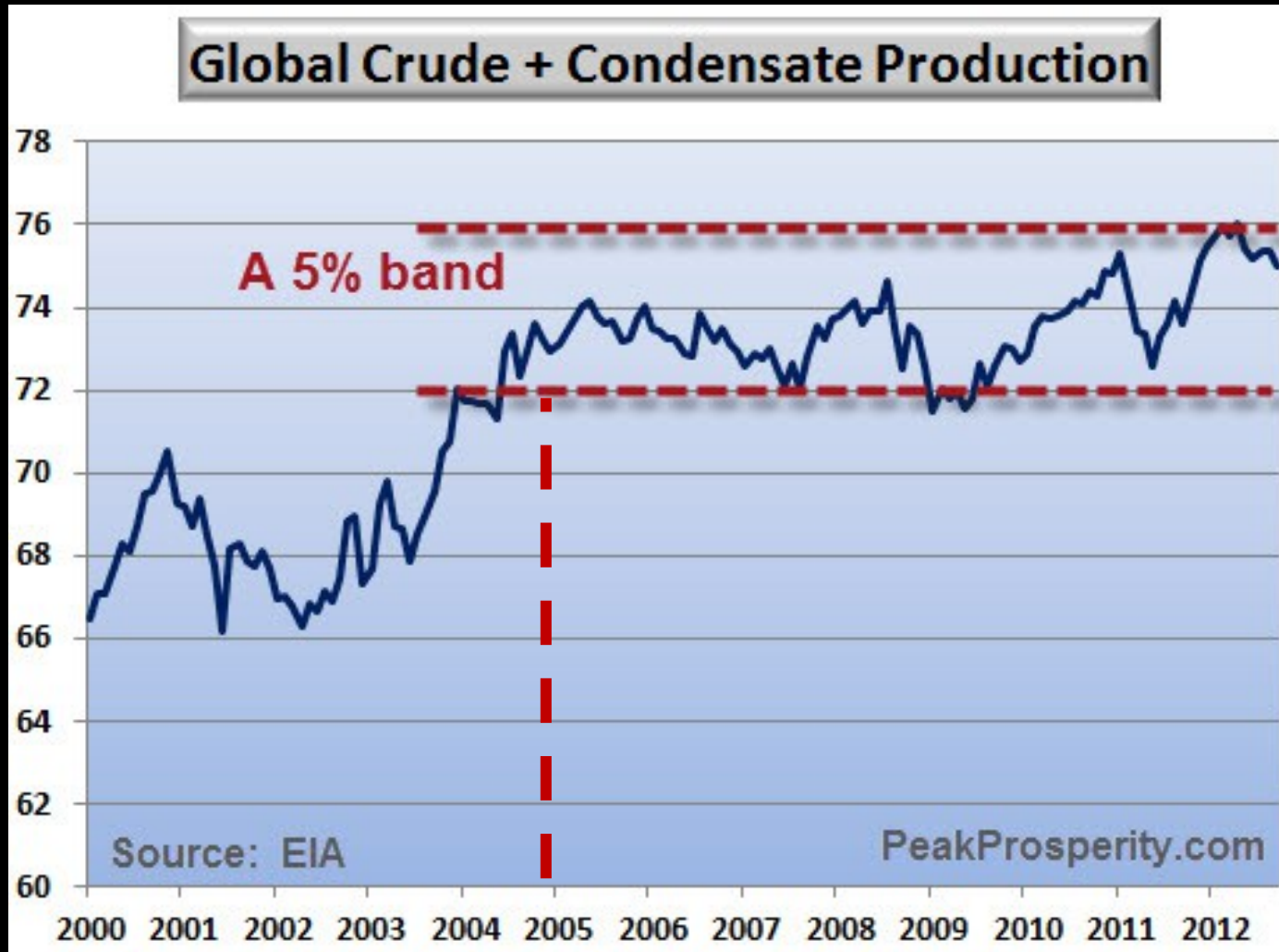
World Oil Discovery by Decade



Doubling Spending On Oil Projects...

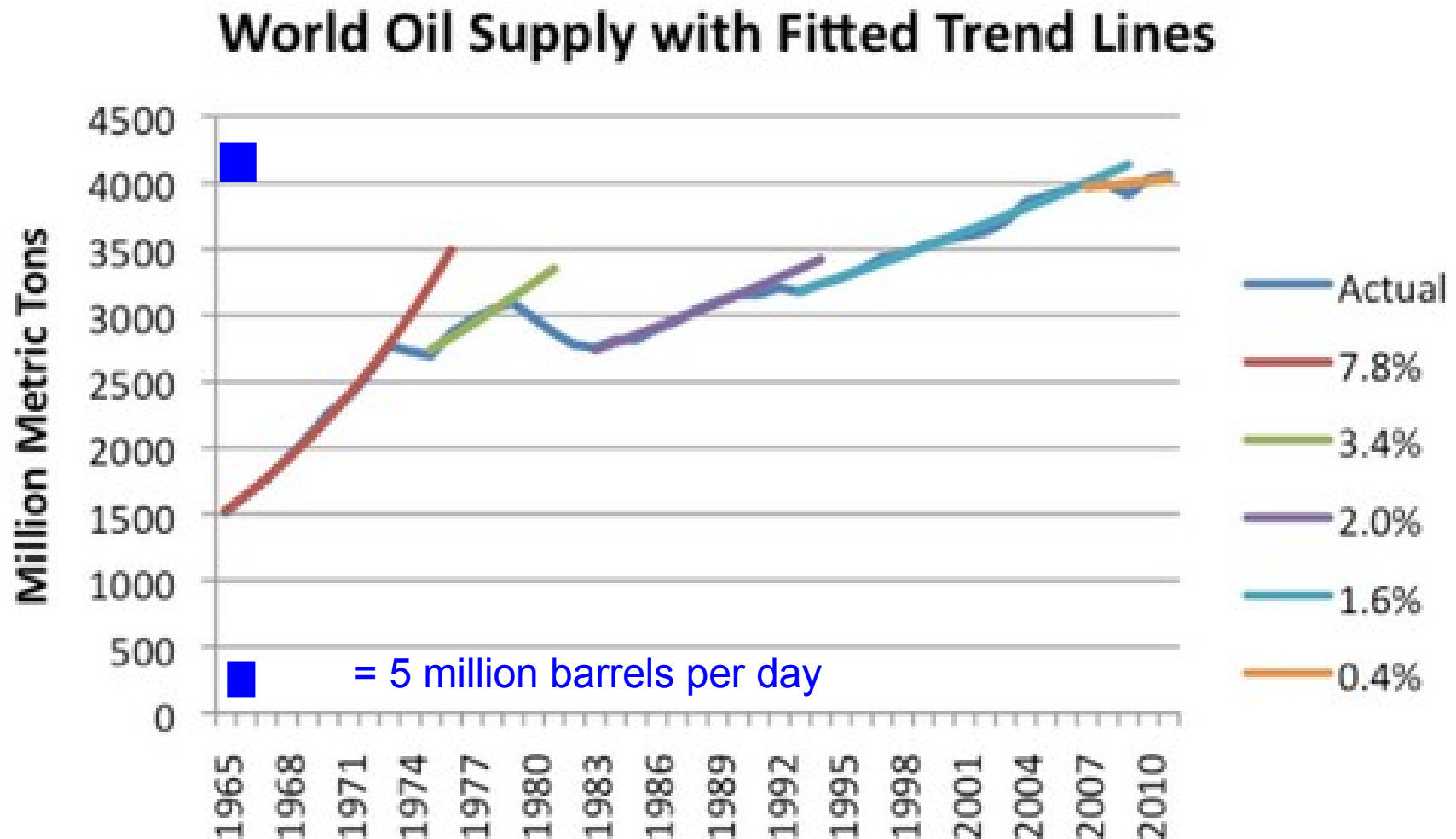


...Kept The World Running In Place



What Sorts Of Explanations Do We Have For That?

The Easy Days Are Over



22

Environment

Copper Ore – 10%



Copper Nugget



Copper Mining - Bingham Canyon Mine, Utah



0.54%

24

No Fresh Continents To Find...



**THE NEXT 20 YEARS ARE
GOING TO BE
COMPLETELY UNLIKE THE
LAST TWENTY YEARS**

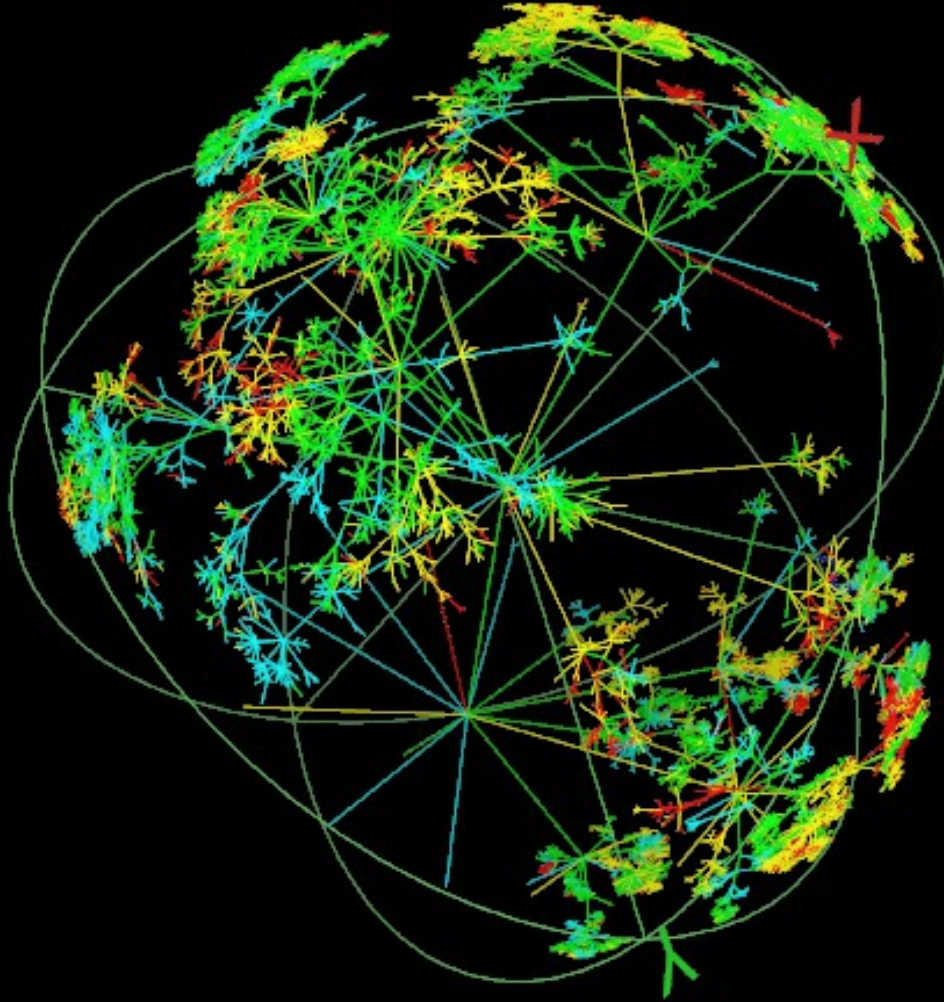
The Implications Are Huge

- The past will be a poor guide of the future
- Growth as we knew it is over
- Huge shifts in the economy towards the basics
- Risks are enormous, badly understood and hardly talked about
- The opportunities are enormous

***Nothing* Based
On Perpetual
Exponential
Growth Is
Sustainable**

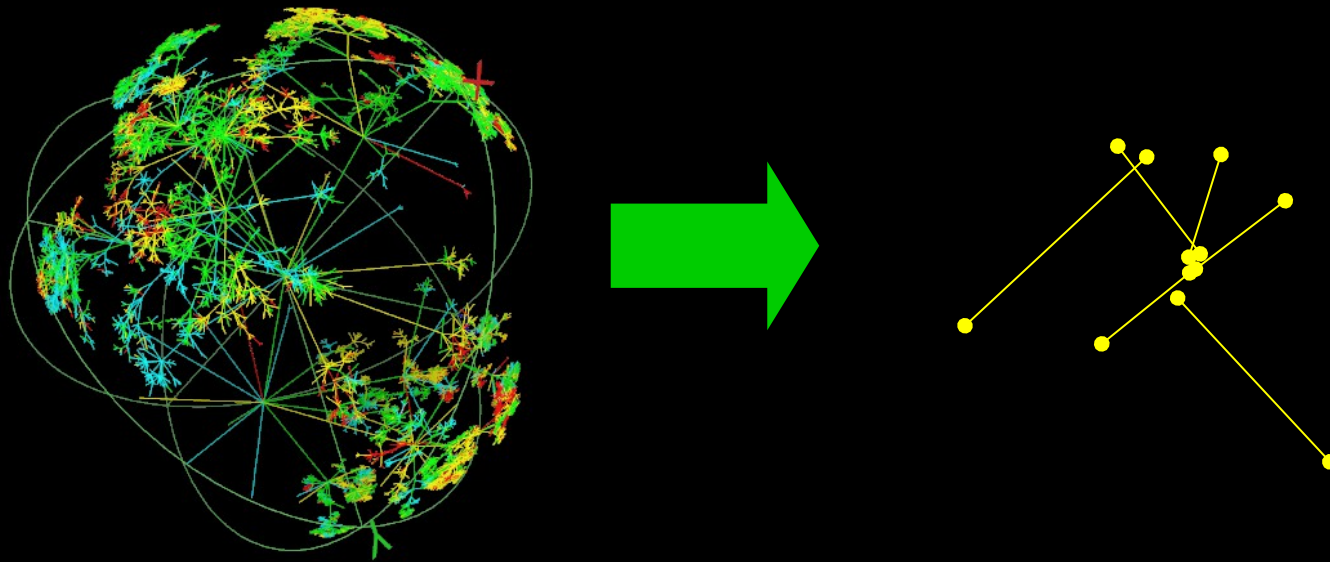
A Method For Prospering

The Economy is a Complex System



A Prediction

Simplicity is coming....

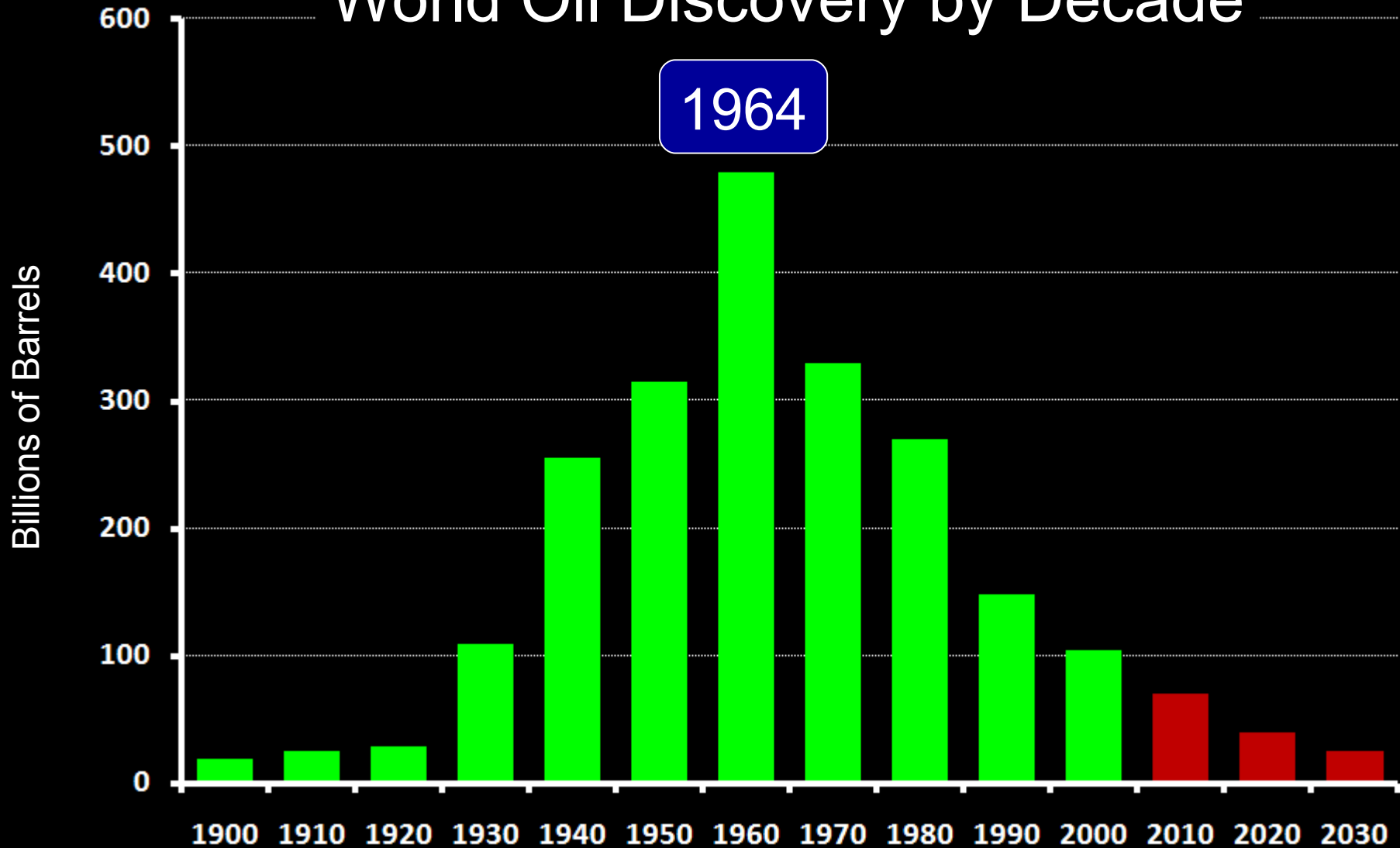


Black Swans Are The Rule...



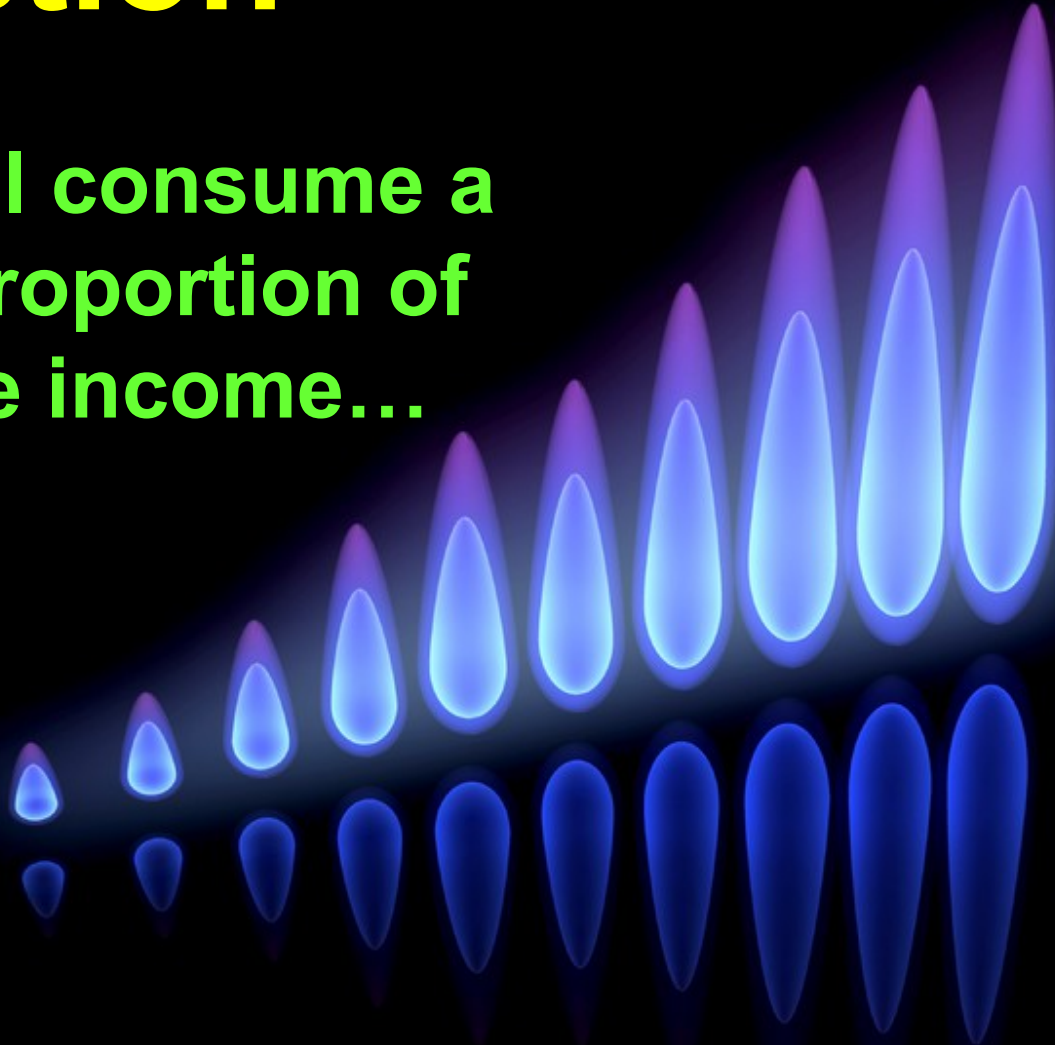
Oil Is Finite (and we are at peak)

World Oil Discovery by Decade



Prediction

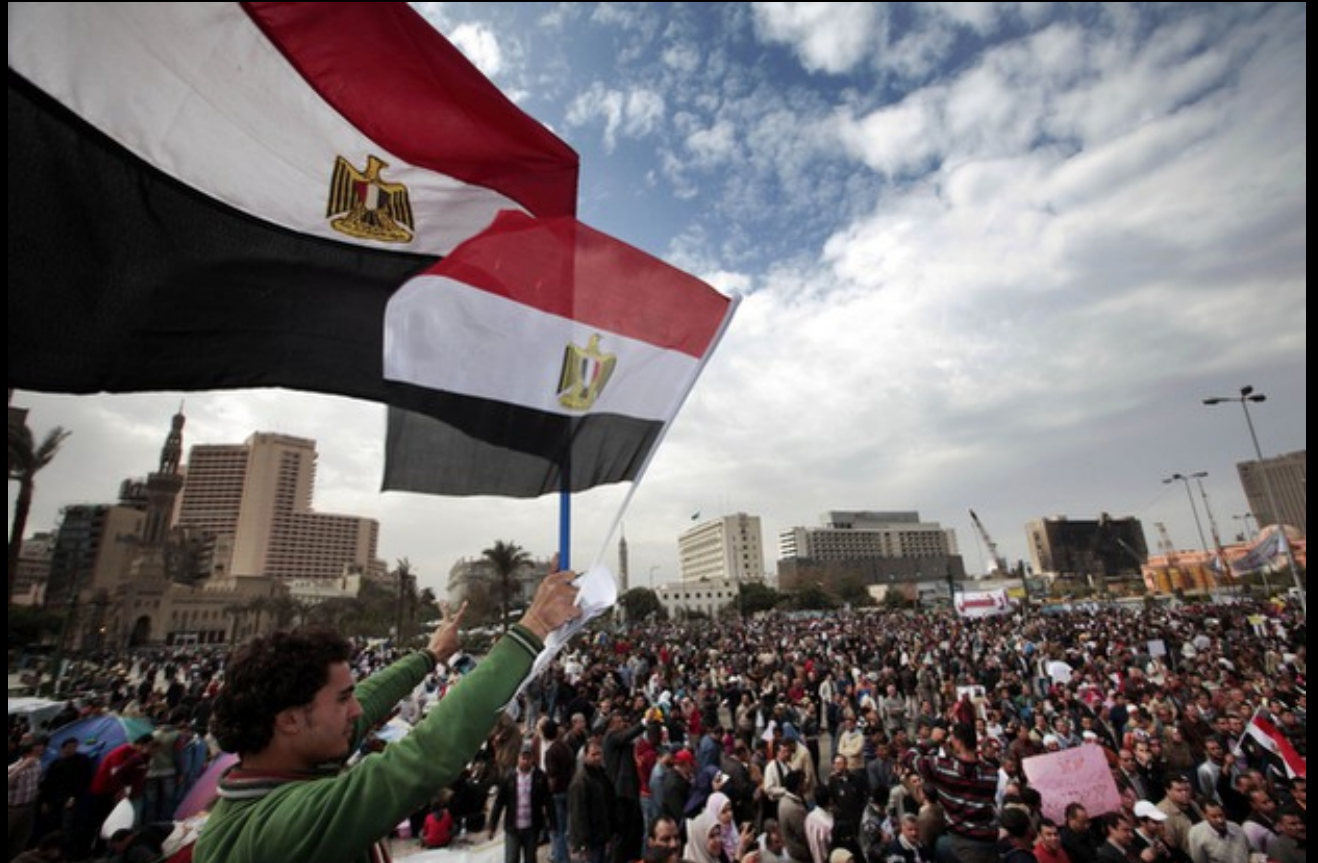
Energy will consume a growing proportion of disposable income...



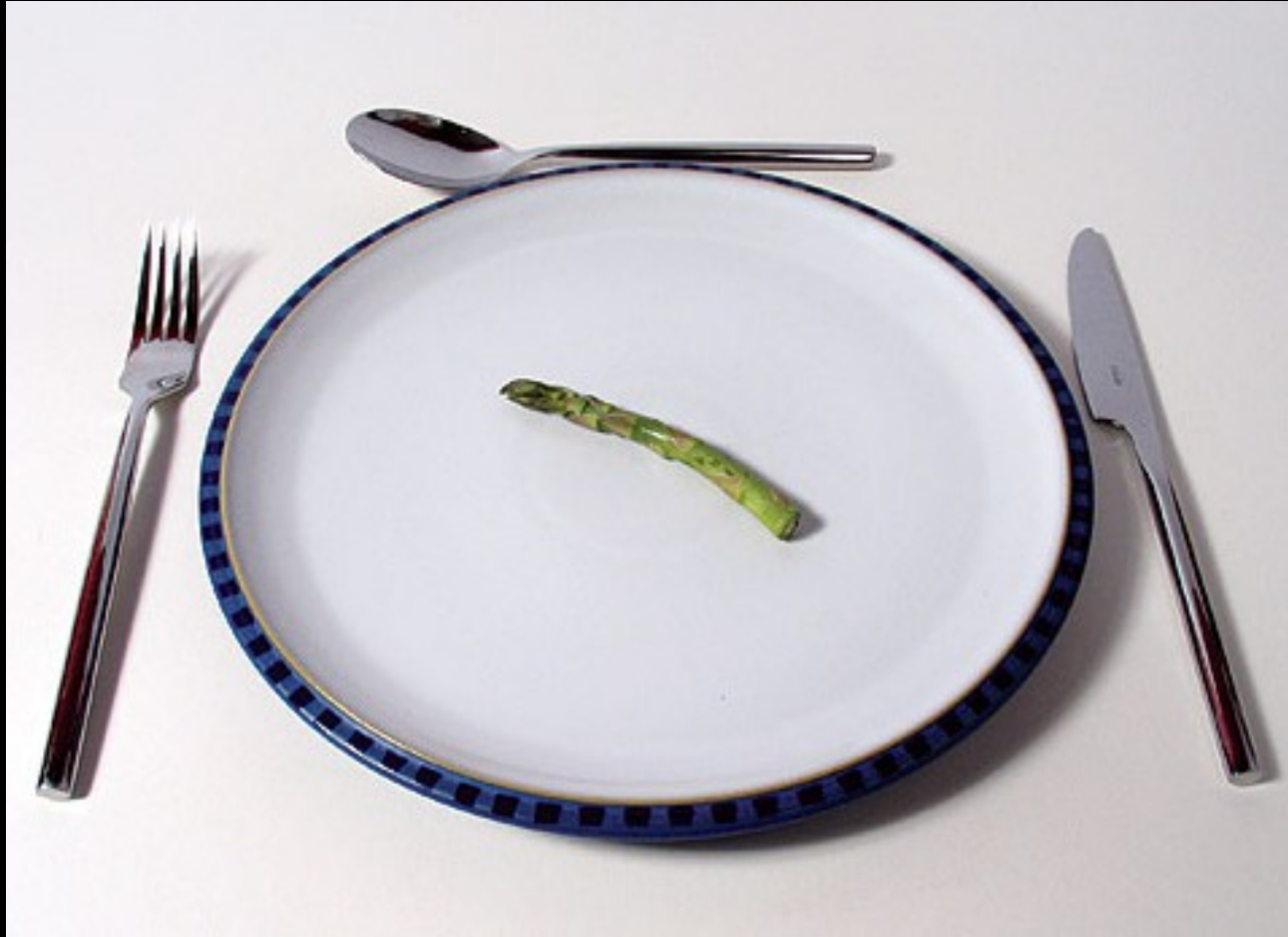
Prediction

Food prices
will mirror
energy.

Unrest will
follow.



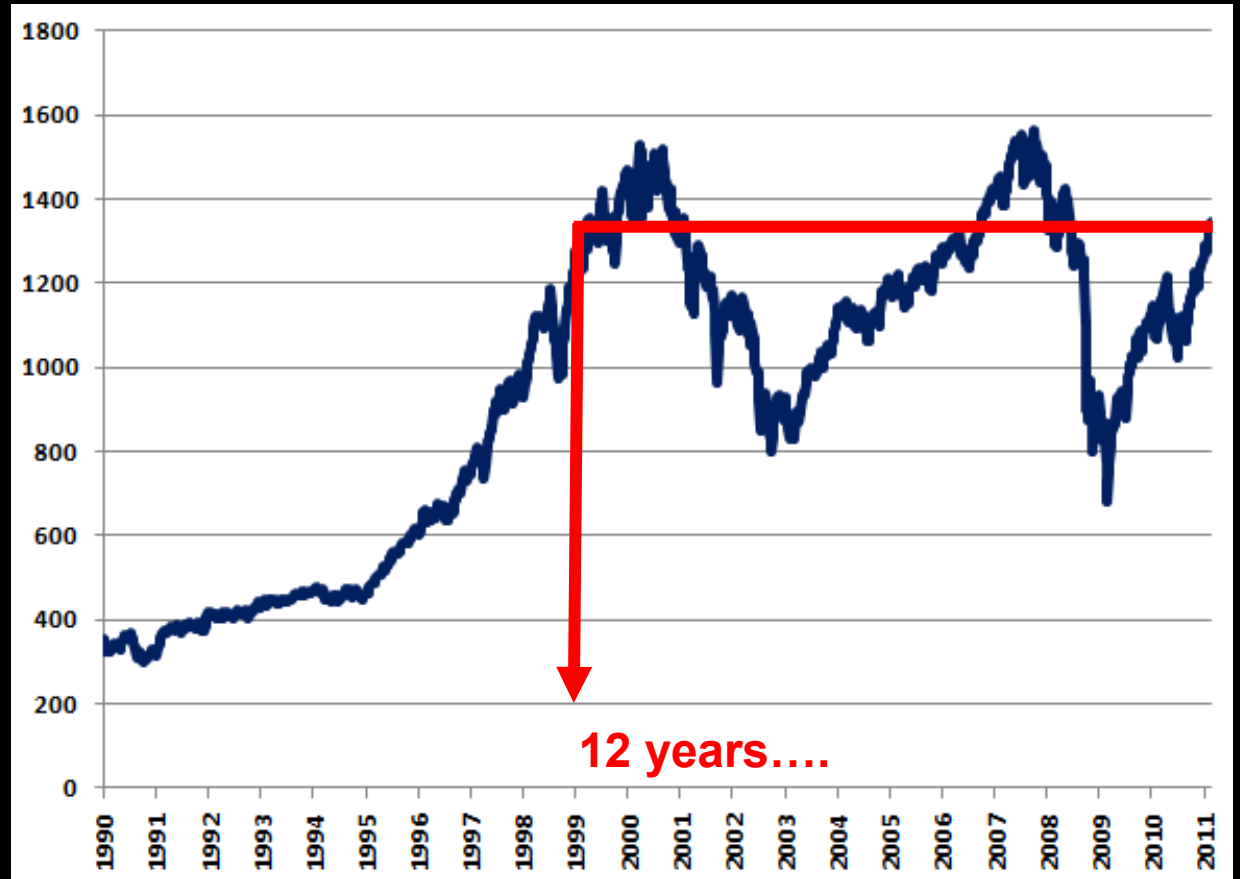
Peak Oil Will Starve The Economy



Prediction

Rising energy costs will stifle growth.

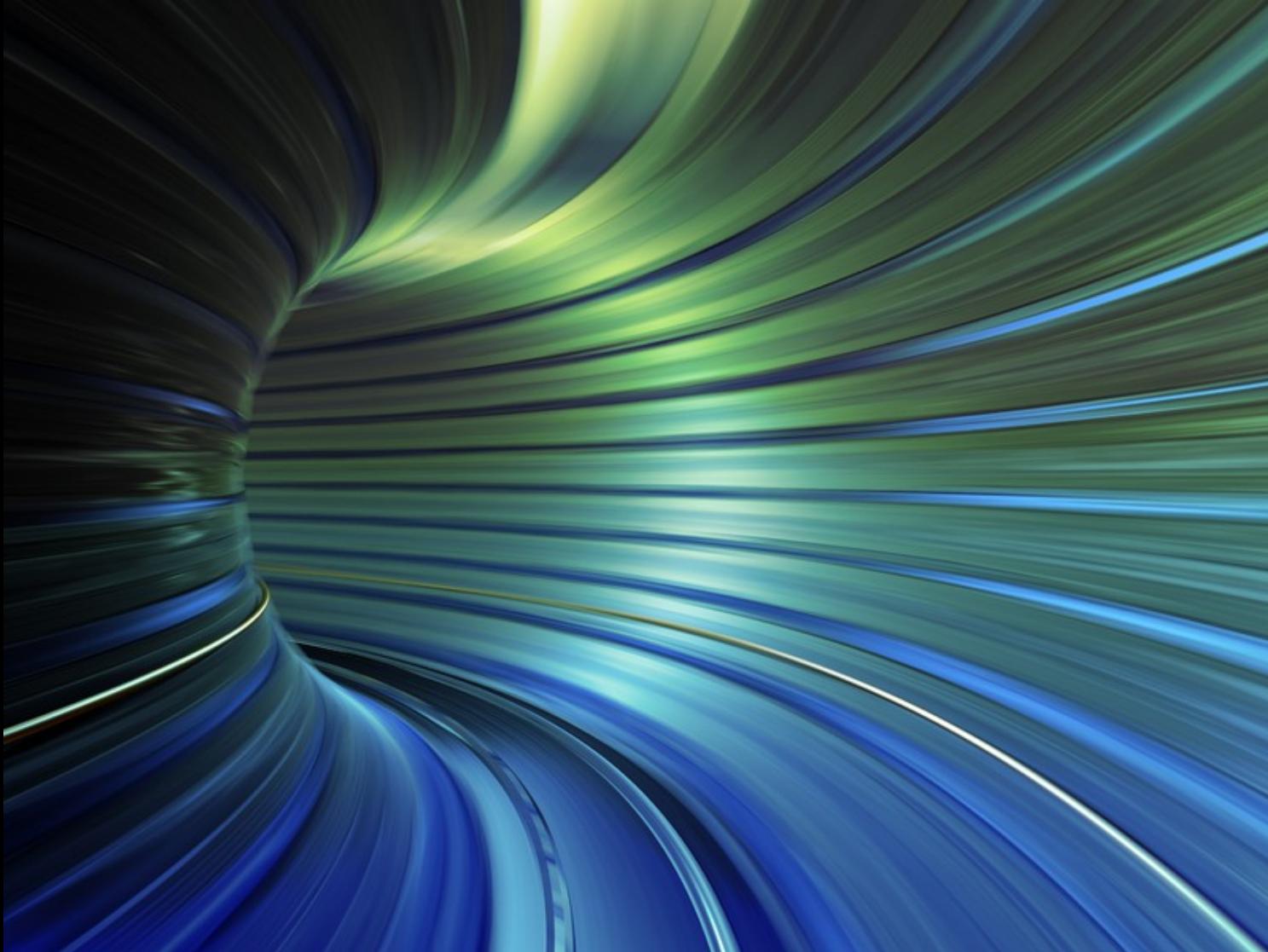
Without growth, what are stocks and bonds worth?



A Question:
How Much Are The
Stock And Bond
Markets Worth If
We Take Away
Growth?

The BIG Question:
What Will Happen
To Our Exponential
Money (Debt)
System Without
Growth?

Exponential Systems Speed Up...



Prediction: Events Will Unfold Rapidly



Personal Motto:
**“I’d rather be a year
early than a day
late.”**

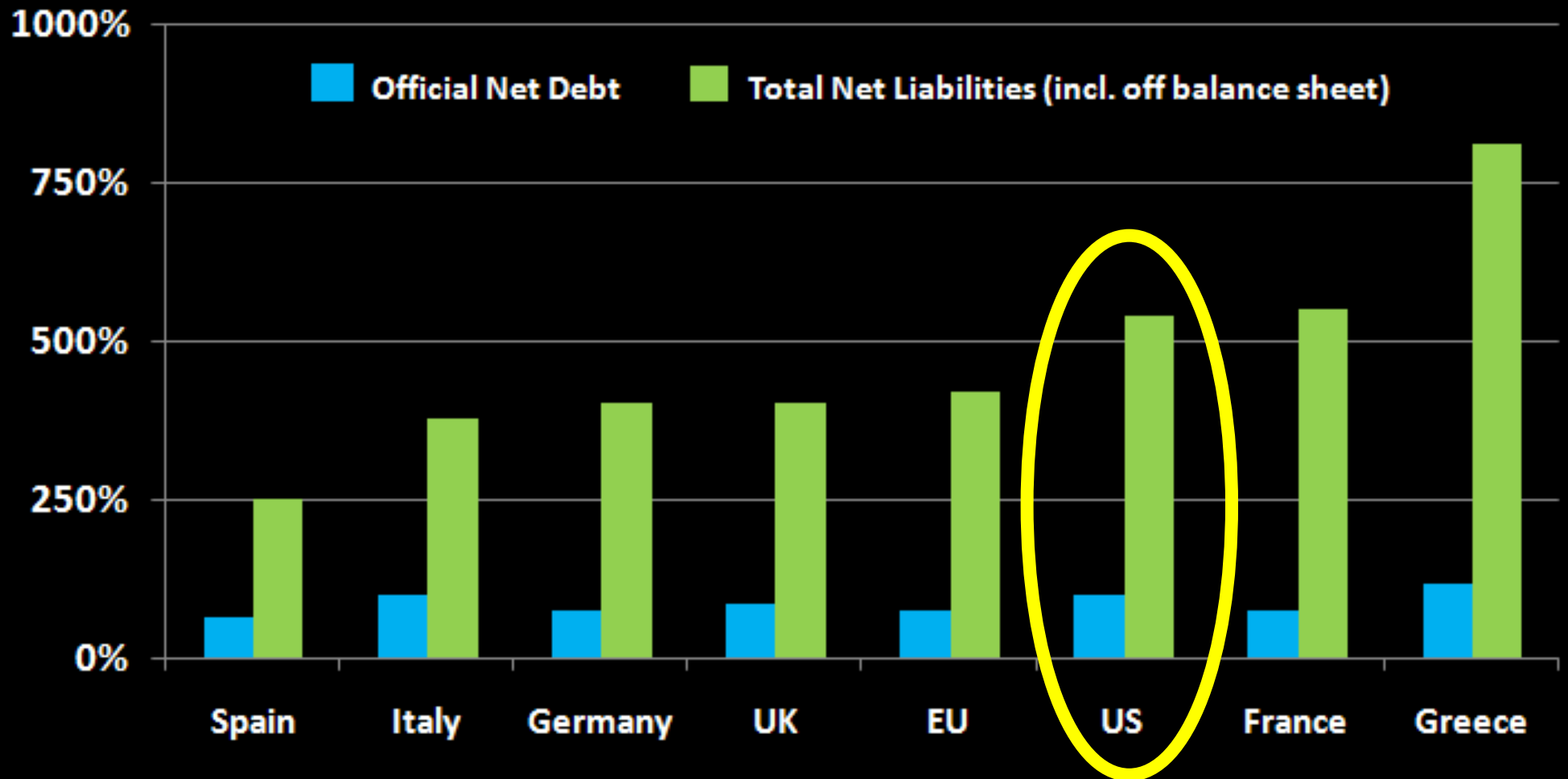
“From The Outside In”



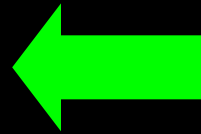
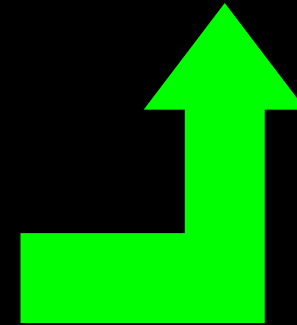
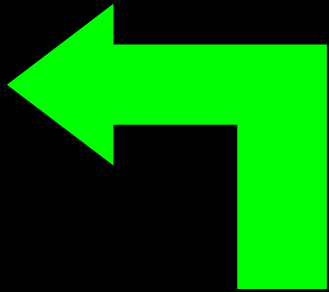
The Response:

**Keep your eye on
the edges of the
system, not the
center**

Global Insolvency



Prediction: Debts Will Not Be Paid Back



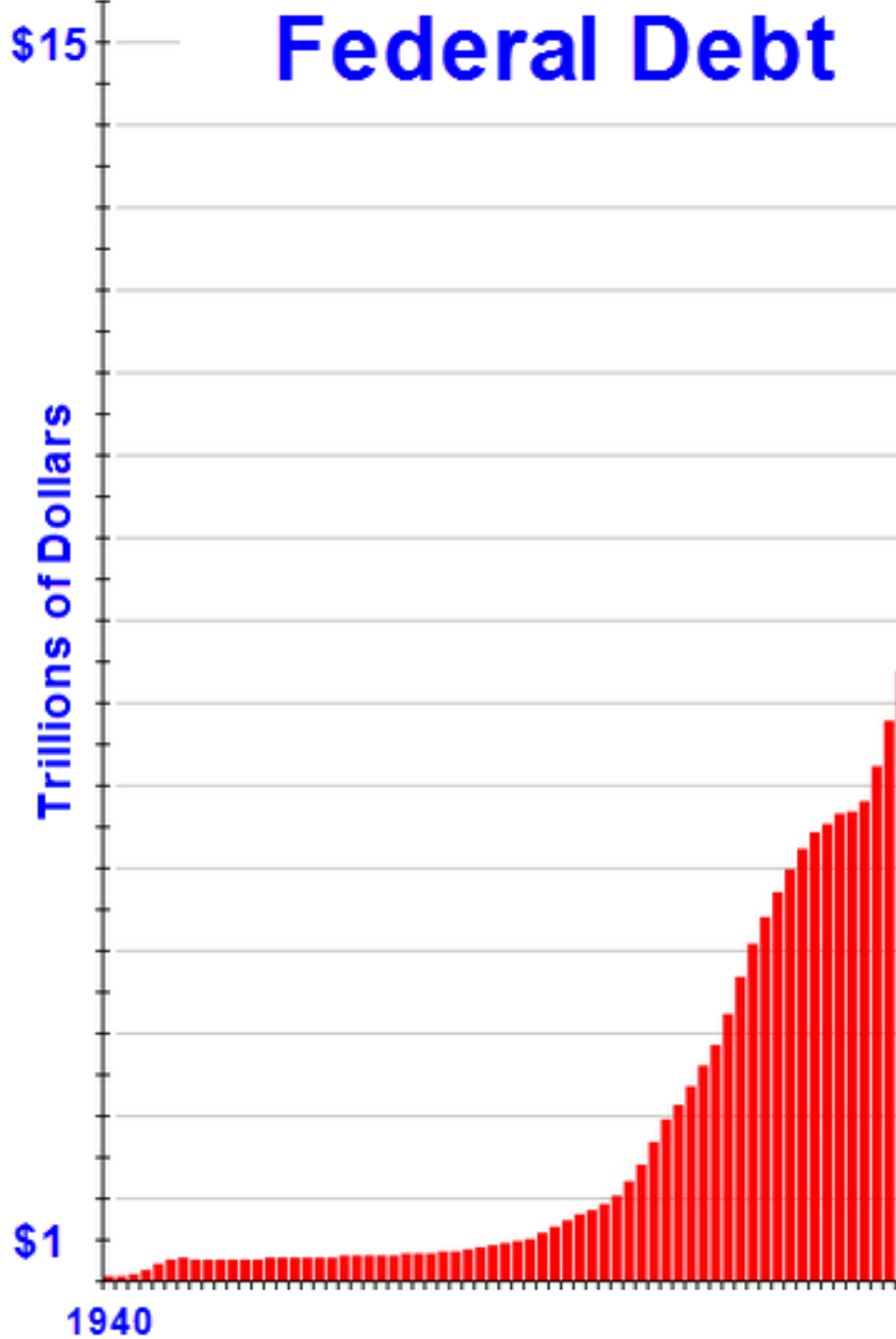
Taking The Easy Way Out



The Risk: Inflation



Federal Debt



Prediction

A Fiscal Crisis
Awaits
The US